Instruction Manual

ALR-AMP-8

Alero 8 Zone Power Amplifier

Distributed Audio

Last Revised: 4/12/2014

AMX DOMESTIC CHANNEL PARTNER and END CUSTOMER LIMITED WARRANTY, DISCLAIMER AND LICENSE

(Excerpt from CHANNEL PARTNER TERMS AND CONDITIONS Versions 11.17.2011 with updates for previous version 8.25.2010 [sections 6.1 (a), (b) and (f)])

Definitions

"End Customer" means an authorized end customer with direct in warranty privileges from AMX. Within this limited warranty, disclaimer and license document, "End Customer" shall have the same meaning as "Channel Partner" with the noted exceptions of Sections 6.5 through 6.9 which are not applicable or available to End Customer's directly from AMX. Offerings described in Sections 6.5 through 6.9 are available to End Customer only through their selected authorized AMX Channel Partner.

6. LIMITED WARRANTY; RETURN, REPAIR AND REPLACEMENT

6.1 AMX warrants the Products to be free of material defects in materials and workmanship under normal use for three (3) years from the Shipping Date (or such other period as may be specified below), subject to the following limitations and exceptions ("Limited Warranty"). For any Product, "Warranty Period" means the period during which the Limited Warranty is in effect, as set forth herein.

(a) LCD and LED panels are warranted for three (3) years from the Shipping Date, except for the display and touch overlay components, which are warranted for a period of one (1) year from the Shipping Date.

(b) Disk drive mechanisms, pan/tilt heads and external power supplies are warranted for a period of one (1) year from the Shipping Date.

(c) AMX lighting Products are warranted to switch on and off any load that is properly connected to our lighting Products, as long as the AMX lighting Products are under warranty. AMX also warrants the control of dimmable loads that are properly connected to our lighting Products. The dimming performance or quality thereof is not warranted, due to the random combinations of dimmers, lamps and ballasts or transformers.

(d) AMX software and firmware included in the Products is warranted for a period of ninety (90) days from the Shipping Date.

(e) Batteries and incandescent lamps are not covered under the Limited Warranty.

(f) The Warranty Period for AMX AutoPatch EPICA, Enova DGX, Modula, Modula Series 4, Modula Cat Pro Series and 8Y-3000 Product models will continue for the original installation until five (5) years after the issuance of a PDN with respect to termination of the applicable Product model. However, if the Product is moved from its original installation to a different installation, the Warranty Period will automatically become three (3) years from the Shipping Date and, if more than three (3) years have elapsed since the Shipping Date, the Warranty Period will automatically expire.

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Note: *Refer to www.amx.com to view/download the latest complete AMX Warranty and Return Policies.*

Important Safety Instructions

Please adhere to all of the following safety instructions:

1. Read the instructions.
2. Keep the instructions.
3. Heed all warnings.
4. Follow the instructions.
5. Do not use this apparatus near water.
6. Clean this apparatus only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the grounding type plug. The grounding plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. The appliance coupler is used as the disconnect device and shall remain readily operable.

WARNING! *To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.*

WARNING! *This apparatus shall be connected to a MAINS socket outlet with a protective earthing connection.*

WARNING! *This apparatus shall not be exposed to dripping or splashing, and no objects filled with liquids, such as vases, shall be placed on the apparatus.*

DANGER! *No user serviceable parts inside. Service is to be performed only by AMX.*

Safety Symbol Definitions	
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.
	The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of non-insulating, dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

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Alero ALR-AMP-8 8 Zone Power Amplifier

Overview

The Alero ALR-AMP-8 8-Zone Power Amplifier (**FG1104-01**) features 16 distribution channels of true audiophile quality sound and highly efficient, heat-dissipating Class D power amplification – all smartly designed to fit into a compact 1RU chassis. Alero perfectly complements the AMX Precis DSP for a completely unified, whole-home distributed audio source switching and amplification solution.

Whether you are listening to music in your home theater, your kitchen or by the pool – the experience is the same – life changing. AMX equipped Alero with the same switching amplification technologies by ICEpower®, an independent subsidiary of Bang & Olufsen a/s, that are also used by several of the world's premium home audio and automotive audio manufacturers. And it's engineered to perform as well as it sounds.

FIG. 1 Alero ALR-AMP-8 Audio Amplifier

Common Application

The Alero Power Amplifier is ideal for discerning audiophiles who demand the highest quality of multi-room distributed audio.

Product Features

- **Audiophile Performance** – Features the same switching amplification technologies by ICEpower® that are also used by several of the world's premium home audio and automotive audio manufacturers
- **16 Channels at your Beck and Call** – No matter how large or far reaching the property, you have 16 channels available for all kinds of zoning configurations
- **Available Output Power** – 80 watts per channel at 4 ohms / 160 watts at 8 ohms bridged
- **More Room in the Rack** – At just 1RU high, Alero offers you the ability to install more components in the same rack
- **Cool Running** – Class D amplifier technology ensures efficient heat dissipation and low power consumption

Product Specifications

Alero ALR-AMP-8 Product Specifications	
General	
Number of channels	16 channels in 8 stereo Zones; each Zone can be bridged.
Output power	• 80W per Ch. in SE, 4Ω (0.03%THD+N, 20Hz – 20kHz) • 160W per Ch. in BTL, 8Ω (0.04%THD+N, 20Hz – 20kHz)
Signal sense	Audio input sense, 12V trigger and 3-5V trigger
Standby power consumption	Less than 0.25W
Audio	
Amplifier	• Amplifier Gain: The audio gain (20Hz to 20kHz) is 25.8dB ±0.5dB. • Amplifier Input: The amplifier has a Single Ended input. Maximum input voltage without clipping is 1Vrms. • Amplifier Output: The amplifier uses a Single Ended output stage. Thus the power output is GND referenced. Maximum output voltage without clipping is 28Vp.

Alero ALR-AMP-8 Product Specifications (Cont.)	
Audio (Cont.)	
THD + N	0.003%, 4Ω, SE, f=100Hz, Po=1W
Dynamic range	110dBA SE, 115dBA BTL
Idle noise	50uV, A-weighted, 20Hz-20kHz
Upper bandwidth, -3 dB	• 100 kHz, 4Ω, SE • 120 kHz, 8Ω, SE
Frequency response	±0.4 dB, 10Hz- 20kHz, all loads
Input impedance	47K Ω
Output serial impedance	30m Ω, f≤1kHz
AC Mains Power	
AC mains power	Universal Mains 100-240VAC, 50-60Hz
Fuse rating	T6.3A_H 250V
Power connection	IEC 320 C13 power connector with 3-pole detachable power cord
Thermal	
Environmental operating temperature	32˚- 113˚F/ 0˚- 45˚C
Thermal dissipation	Two low noise fans mounted in side panels
Thermal dissipation (heat losses)	• 0.23 W/ 0.8 BTU/hr, standby • 40 W/ 136.5 BTU/hr, idle, all ch. • 100 W/ 341 BTU/hr, max output power, all ch. driven
Physical	
Height	1U, 1.7 inches/44 mm (1 RU)
Width	16.7 inches (424mm) - Fits in a standard 19" equipment rack
Depth	8.98" (228mm) without connectors and 9.30" (236.3mm) with connectors
Weight	10.98 lbs (4.1kg)
Certifications	• FCC • CE • UL • IEC • PSE • C-TICK

Front Panel Components (LEDs)

The front panel features three LEDs (see FIG. 1 on page 1):

POWER LED (Green/Red)

The *Power* LED indicates that the current power state of the amp:

- **Green** indicates that the amplifier is On.
- **Red** indicates that the amplifier is receiving power, but is in Standby mode.

OC/CLIP LED (Yellow/Red)

The *OC/CLIP* LED indicates that either the current of one or more of the speaker outputs has exceeded its maximum or that the power supply is overloaded.

NOTE

The amplifier outputs are limited to 20A peak each in order to protect the power stages against overload during a short circuit, or over-current event on the output of the amplifier.

- **Yellow** indicates an OC (over-current) shutdown of the amplifier output.- In the case of an OC event, the amplifier will shut down to protect itself, and indicate an OC event on this LED (yellow) and the OC pin (pin 8 on the 10-pin I/O port - see page 10). An OC event can indicate a cable fault, installation fault or defective speaker.
- **Red** indicates an overload event with the Power Supply. The LED will light red if internal temperature sensors on the power supply sense an abnormally high temperature, or if power supply over-current/over-load/power-limit circuits are triggered. In either case, the power supply will limit the amplifier output to keep the power supply within safe limits, while keeping the music playing.

THERMAL LED (Red)

The *Thermal Protection* LED indicates thermal shutdown of the individual zones (amplifier boards).

- The temperatures of all the output channels are individually monitored, and if one or more of them reaches the thermal limit (105°C) then the respective Zones will shut down and go into soft start mode (Channels 1/2 = Zone 1, Channels 3/4 = Zone 2, etc), and the Thermal Protection LED will be lit.
- The other Zones will continue to be active. When the temperature has dropped below the thermal threshold, the respective Zone(s) start up again automatically.

Rear Panel Components

The rear panel provides all input, output, control and power connections (FIG. 2):

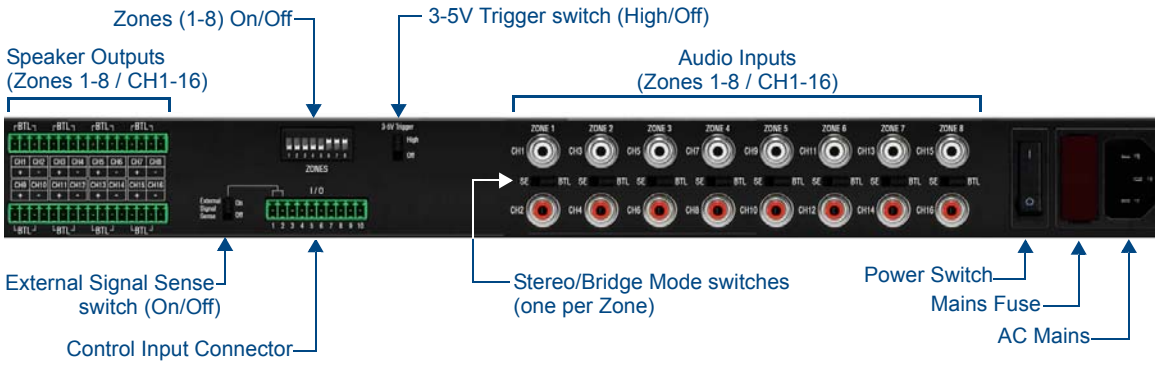

FIG. 2 ALR-AMP-8 Rear Panel

Refer to the *Installation* section on page 5 for connector details and wiring information.

System Diagram

FIG. 3 provides a basic system diagram showing the Alero in a NetLinx System:

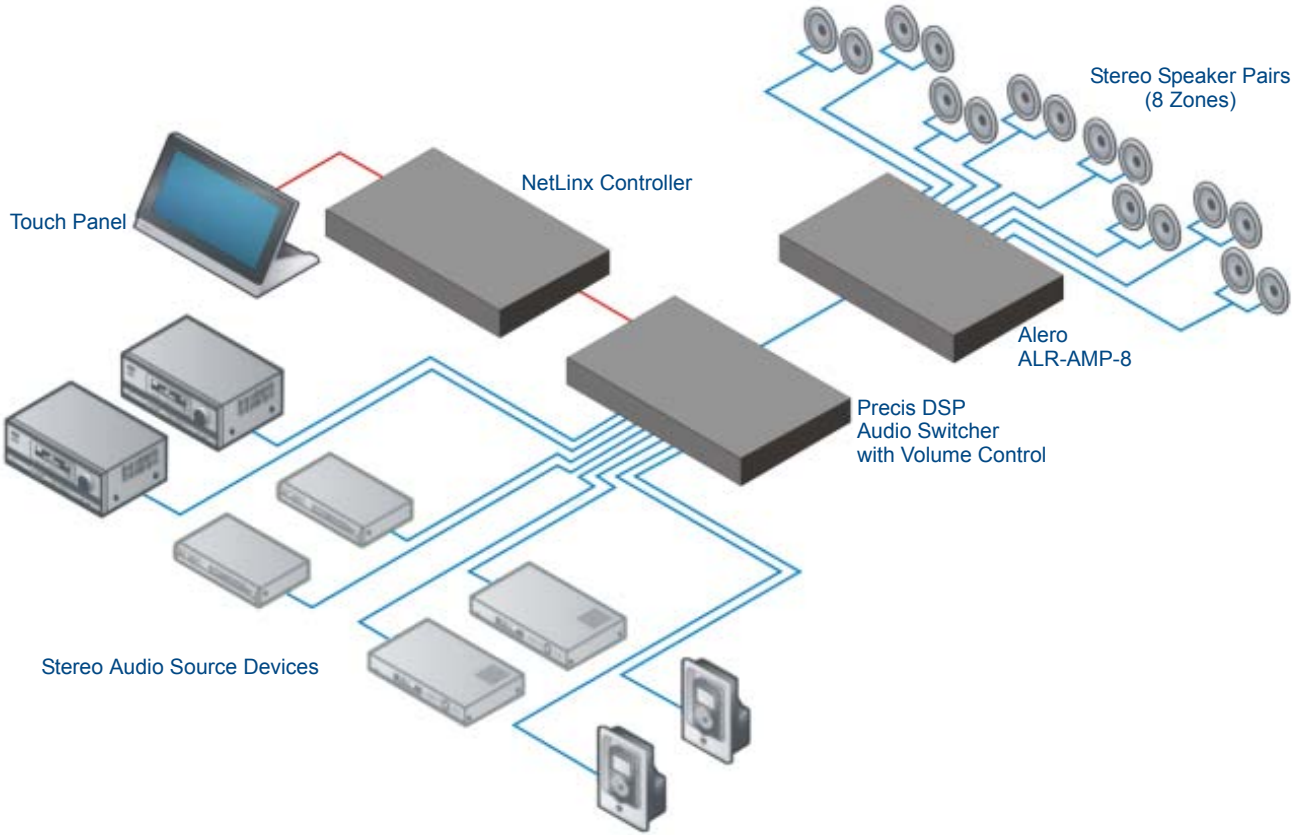

FIG. 3 Alero ALR-AMP-8 System Diagram

NOTE

Note that the Alero ALR-AMP-8 requires an external preamp for volume control.

This example shows eight stereo audio source devices connected to the Alero ALR-AMP-8, and eight stereo Zones for audio output.

- The Alero also supports a *Bridge Mode* (BTL) configuration. Bridge Mode converts one stereo pair into a single, stronger amplification channel. If all Zones are bridged, there are 8 channels available.
- Stereo and Bridged Zones can be mixed as necessary (see the *Connecting Audio Source Devices* section on page 5 for details).

Controlling the Alero ALR-AMP-8

Volume control for the Alero ALR-AMP-8 is managed by an external pre-amp / audio switcher, such as the AMX Precis DSP (Fixed Matrix Switcher with Stereo Audio with RCA Digital Volume Control and Digital Signal Processing).

The Alero ALR-AMP-8 can be powered on and off externally by using the two signals 12V trigger and 3-5V trigger. A Signal Sense function is also provided which automatically can switch on the Alero in the event of an audio signal and switch off the Alero to enter standby mode when no audio signal has been present on the signal terminals for approximately 13 minutes.

Refer to the *On/Off Control (12V Trigger, 3-5V Trigger and Signal Sense)* section on page 14 for details.

Installation

Mounting the Alero into an Equipment Rack

The Alero ALR-AMP-8 can be mounted in a 19" equipment rack or on a solid flat surface.

Use the included removable rack ears and removable feet for mounting.

Ventilation

NOTE

The maximum operating ambient temperature is 45°C (113°F).

- To ensure that the rack enclosure is adequately ventilated, there must be a minimum of 3" all around the Alero unit.
- Sufficient airflow must be achieved (by convection or forced-air cooling) to satisfy the ventilation requirements of all the items of equipment installed within the rack.

Rack Mount Safety Instructions

- Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Wiring and Connections

All speaker wire connections must be made with the amplifier off. The amplifier must be off whenever you make changes to the input connections.

Connecting Audio Source Devices

Source Devices connect to the Audio (Signal) Inputs connectors on the rear panel. (FIG. 4):

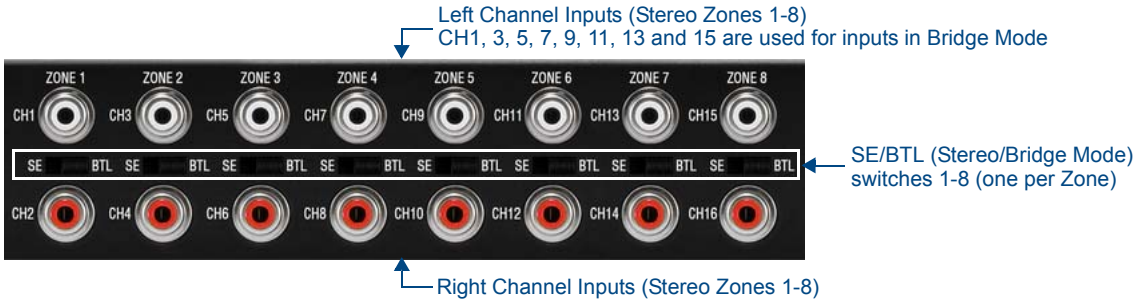

FIG. 4 Audio Input connectors (L/R pairs for 8 stereo inputs, 16 total)

- The Audio Inputs consist of 16 RCA/phono terminals; each of the single-ended input channels having a signal input and ground.
- Each Zone (1-8) consists of two channels (odd and even) that represent the left and right channels in a stereo pair. For example, CH1 and CH2 represent the left and right channels for Zone 1.

Audio (Signal) Inputs

The following table provides pinout information for the Audio Inputs:

Audio Input Connectors - Pinout Information			
PIN	**Function**	**Description**	**Type**
1	Signal +	Single Ended Signal Positive	Input
2	Signal GND	Single Ended Signal GND	GND

SE/BTL (Stereo/Bridge Mode) Switches (1-8)

The ALR-AMP-8 features eight **SE/BTL** slide switches (located between the two RCA/phono input connectors for each Zone - see FIG. 4). These switches provide the ability to set each of the eight Zones to either Stereo Mode (SE) or Bridge Mode (BTL). Note that by default, all Audio Inputs are set to Stereo Mode.

- **Stereo Mode (SE)**: In Stereo Mode, both channels are used for stereo audio input. Stereo mode provides true stereo separation between the left and right channels in each Zone.
- **Bridge Mode (BTL)**: Bridge Mode uses one input channel of the amplifier to combine the power from both channels output into one single output. In Bridge Mode, the odd channels are used for audio input and the even channels are disconnected internally.

Connecting Input Devices in Stereo Mode

Stereo input devices use both input channels (left and right) for each Zone.

- **Odd**-numbered channels (with ***white*** connectors) should be used to connect to the **left** output on the source device.
- **Even**-numbered channels (with ***red*** connectors) should be used to connect to the **right** output on the source device.

The Alero ALR-AMP-8 supports up to eight stereo input devices, each one associated with an input Zone (1-8). Note that each Zone represents a stereo pair. For example, Zone 1 consists of CH1 (left channel) and Ch2 (right channel).

There is a direct correlation between the audio inputs and the speaker outputs. For example, a stereo device connected to the Zone 1 inputs (CH1 and CH2) will output on the CH1 (left) and CH2 (right) speaker outputs (FIG. 5):

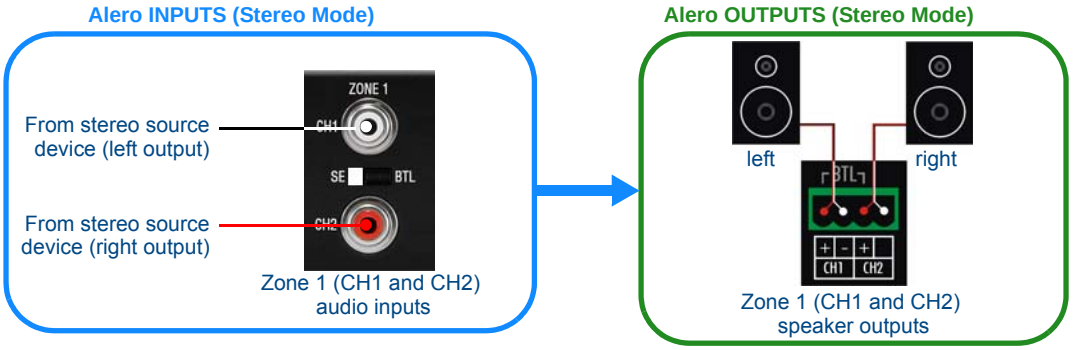

FIG. 5 Stereo Input Mode - Zone 1 (CH1 and CH2) is output on Speaker Outputs CH1 and CH2

NOTE

When connecting stereo input devices, verify that the Stereo/Bridge (SE/BTL) mode switch for the Zone (see FIG. 4) is set to "SE". This is the default factory setting.

See Also: *Connecting Speakers in Stereo Mode* on page 8.

Connecting Input Devices in Bridge Mode

In Bridge Mode, input devices connect to the *left* input channels only. Note that left input connectors are white, and are the odd-numbered channels (CH1, 3, 5, 7, 9, 11, 13 and 15).

There is a direct correlation between the audio inputs and the speaker outputs. For example, a bridged device connected to the Channel 1 input (CH1) will output on the CH1 (left) and CH2 (right) speaker outputs - see FIG. 6:

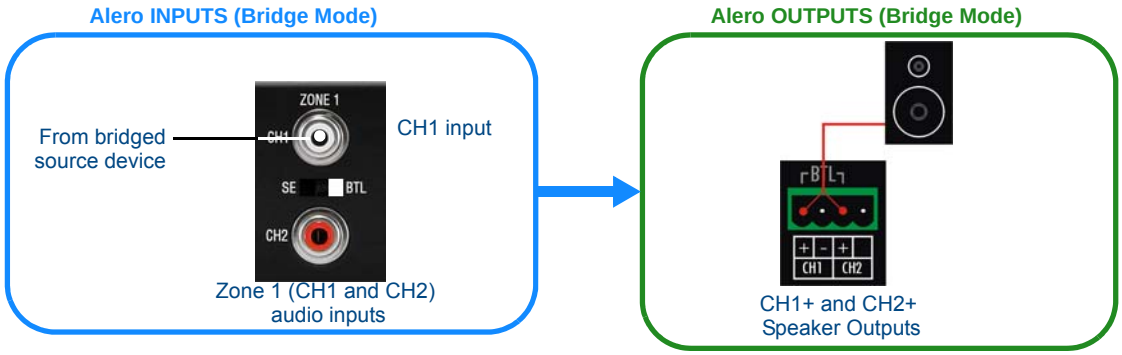

FIG. 6 Bridged Input Mode - Channel 1 is output on a single speaker connected to Speaker Outputs CH1(+) and CH2 (+)

NOTE

When connecting bridged input devices, verify that the Stereo/Bridge (SE/BTL) mode switch for the Zone is set to "BTL" as shown above (FIG. 6).

See Also: *Connecting Speakers in Bridge Mode* on page 9.

Connecting Speakers

All speaker connections must use **Class 2** Wiring.

NOTE

All speaker connections must use Class 2 Wiring. Class 2 Wiring is required due to the fact that power is above 10W per channel under normal operating conditions.

Speakers connect to the captive-wire output terminals (CH1-CH16) on the rear panel (FIG. 7): t

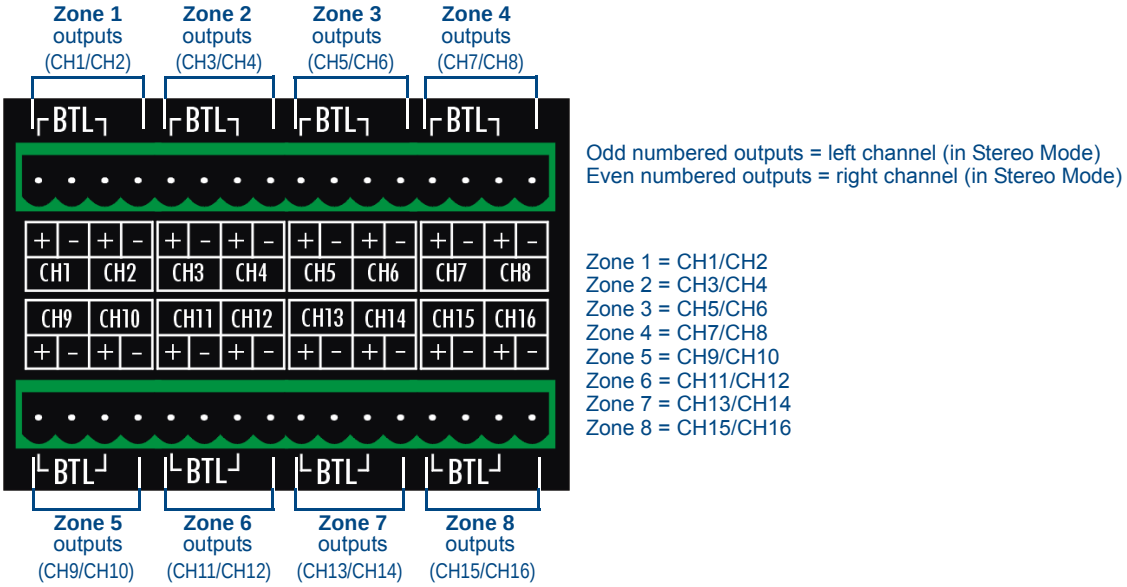

FIG. 7 Speaker (Output) Terminals (16 total, L/R pairs for eight stereo outputs)

Each Zone (1-8) consists of two channels (an L/R pair in Stereo Mode), and each Channel (1-16) uses a 2-pin captive-wire connector to connect to speakers.

For wiring runs longer than 80 feet, 14-gauge speaker wire is recommended.

Speaker Output Connectors

The speaker output connectors consist of two 16 pin captive-wire terminals; each of the output terminals having a "+" and "- " terminal.

The label "BTL" on each speaker pair points to the pins that are used when connecting a single speaker to an input in Bridge Mode (see *SE/BTL (Stereo/Bridge Mode) Switches (1-8)* on page 6).

- See the *Connecting Input Devices in Bridge Mode section on page 7* for details.
- See the *Connecting Speakers section on page 7* for connection details.

The following table provides pinout information for the Speaker Output Terminals

Speaker Output Terminals Pinout Information			
PIN	**Function**	**Description**	**Type**
1	OUT+	Positive balanced audio power output terminal	Output
2	OUT-	Negative balanced audio power output terminal	Output

Connecting Speakers in Stereo Mode

*When connecting stereo speakers, verify that the Stereo/Bridge (SE/BTL) mode switch for the associated Zone (see FIG. 5 on page 6) is set to "**SE**".*

Stereo speaker pairs use both output channels (left and right) for each Zone.

- **Odd**-numbered channels should be used to connect to the **left** speaker.
- **Even**-numbered channels should be used to connect to the **right** speaker.

The ALR-AMP-8 supports up to eight stereo speaker pairs, each one associated with a Zone (1-8).

FIG. 8 illustrates the wiring connection from both Zone output channels to a stereo speaker pair:

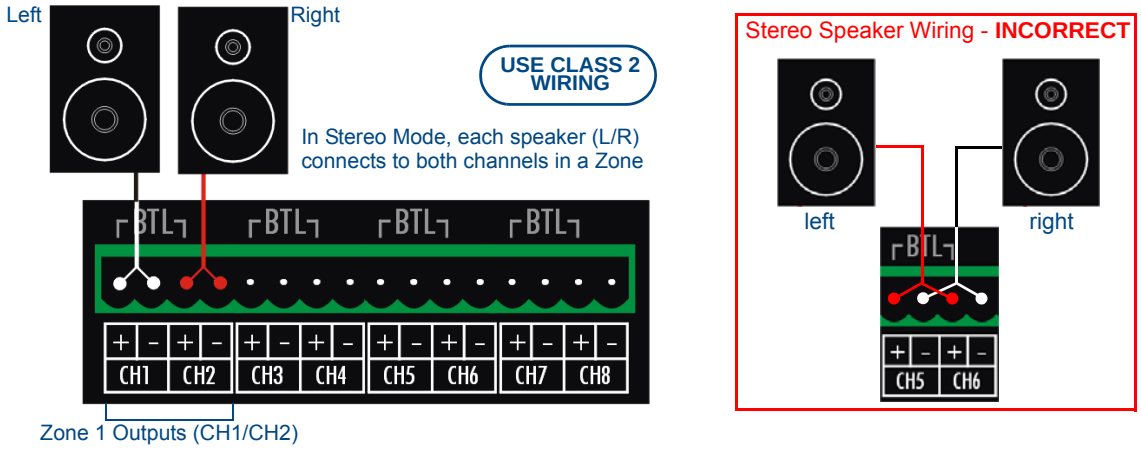

FIG. 8 Stereo Output Mode

If incorrect wiring is used there is a risk of electrical shock and a fire hazard.

The table below illustrates the direct correlation between the audio inputs and the speaker outputs in Stereo Mode:

Audio Inputs to Speaker Outputs - Stereo Mode		
Zone	**Audio Input Connectors**	**Speaker Output Connectors**
1	CH1 (left) / CH2 (right)	CH1 (left) / CH2 (right)
2	CH3 (left) / CH4 (right)	CH3 (left) / CH4 (right)
3	CH5 (left) / CH6 (right)	CH5 (left) / CH6 (right)
4	CH7 (left) / CH8 (right)	CH7 (left) / CH8 (right)
5	CH9 (left) / CH10 (right)	CH9 (left) / CH10 (right)
6	CH11 (left) / CH12 (right)	CH11 (left) / CH12 (right)
7	CH13 (left) / CH14 (right)	CH13 (left) / CH14 (right)
8	CH15 (left) / CH16 (right)	CH15 (left) / CH16 (right)

See Also: *Connecting Input Devices in Stereo Mode* on page 6.

Connecting Speakers in Bridge Mode

NOTE

*When connecting a speaker to a "bridged" input, verify that the Stereo/Bridge (SE/BTL) mode switch for the associated Zone (see FIG. 6 on page 7) is set to "**BTL**".*

In Bridge Mode, both channels in a Zone are connected to a single speaker, via the positive ("+") pins for both output channels (labeled "BTL", as shown in FIG. 9):

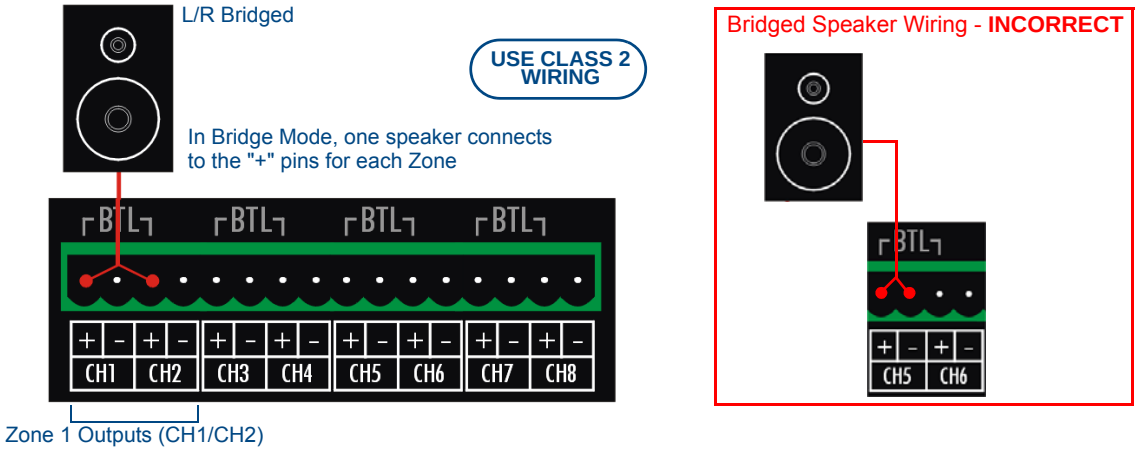

FIG. 9 Bridged Output Mode

If incorrect wiring is used there is a risk of electrical shock and a fire hazard.

The table below illustrates the direct correlation between the audio inputs and the speaker outputs in Bridge Mode:

Audio Inputs to Speaker Outputs - Bridge Mode		
Zone	**Audio Input Connectors**	**Speaker Output Connectors**
1	CH1 (left)	CH1 (+) / CH2 (+)
2	CH3 (left)	CH3 (+) / CH4 (+)
3	CH5 (left)	CH5 (+) / CH6 (+)
4	CH7 (left)	CH7 (+) / CH8 (+)
5	CH9 (left)	CH9 (+) / CH10 (+)
6	CH11 (left)	CH11 (+) / CH12 (+)
7	CH13 (left)	CH13 (+) / CH14 (+)
8	CH15 (left)	CH15 (+) / CH16 (+)

See Also: *Connecting Input Devices in Bridge Mode* on page 7.

I/O (Control Input) Port

The 10-pin captive-wire *I/O (Control Input) port* is for external control and status indication (FIG. 10).

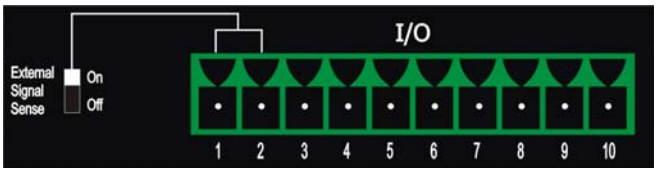

FIG. 10 10-pin I/O (Control Input) Port with External Signal Sense switch

The following table lists the pinouts for the I/O port

10-Pin I/O Port - Pinout Information				
PIN	**Function**	**Description**	**Type**	**Page Reference**
1	Signal Sense +	Signal Sense	Input	page 10
2	Signal GND	Single Ended Signal GND	GND	page 10
3	12V Trigger In	12V Trigger Input	Input	page 11
4	Trigger Loop Out	Trigger Loop Out	Output	page 11
5	GND	Logic / Trigger GND	GND	page 12
6	3-5V Trigger	Logic Level Trigger	Input	page 12
7	Thermal	Thermal Overload Indicator	Output	page 12
8	OC	Overcurrent Monitor Indicator	Output	page 12
9	On signal	On Signal Output	Output	page 13
10	GND	Status GND	GND	page 14

The function of each pin on the I/O port is described below.

Pin 1 - Signal Sense

Pin 1 on the 10-pin I/O port is used for single-ended Signal Sense input (+). This pin detects an input signal from a source device when the source device is active. **Pin 1 (Signal Sense +)** connects to one of the source device's input cables to provide a signal to the Alero when the source device is active (FIG. 11):.

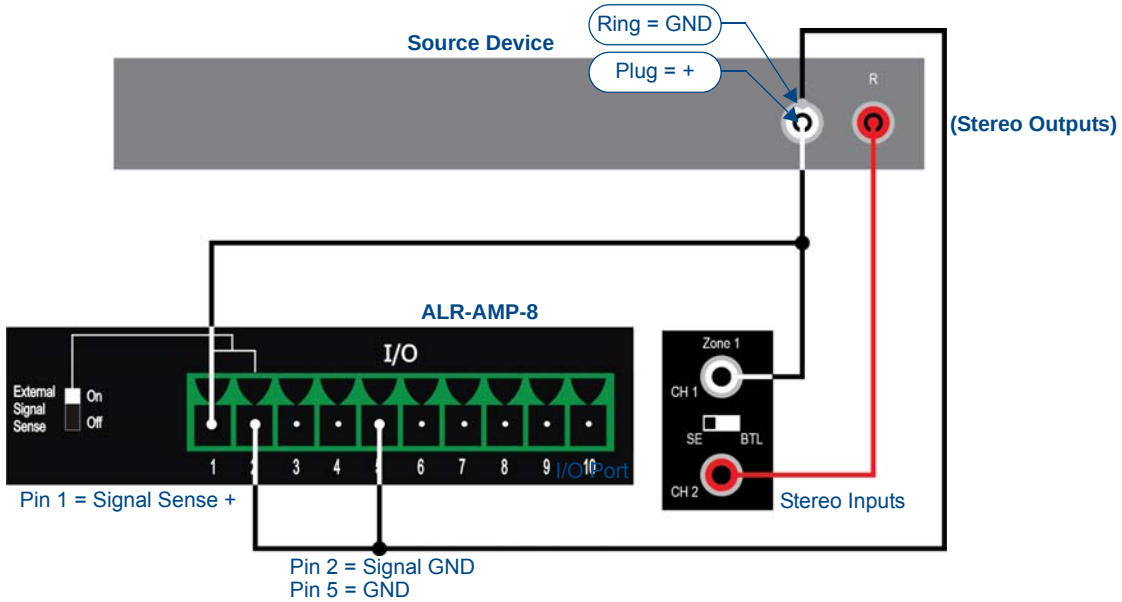

FIG. 11 PIN 1 Example - Signal Sense Connection (Unbalanced)

External Signal Sense Switch

With the *External Signal Sense* switch in the ON position (see FIG. 10), the amplifier is automatically turned on when an audio signal is present, and automatically placed in standby mode when no audio signal has been present on the signal terminals for approximately 13 minutes.

- Note that the example diagram in FIG. 11 indicates the Signal Sense connection tied to the Left output from the source device, but Signal Sense can come from either output.
- The amplifier will power up if a signal is applied to the signal sense input. By default, the *External Signal Switch* is set to the ON position.

Pin 3 - 12V (In) Trigger

The Alero can be turned On or placed in Standby mode externally via a 12V Trigger signal. A 12V trigger input is accessible via Pin 3 on the 10-pin I/O port (FIG. 12).

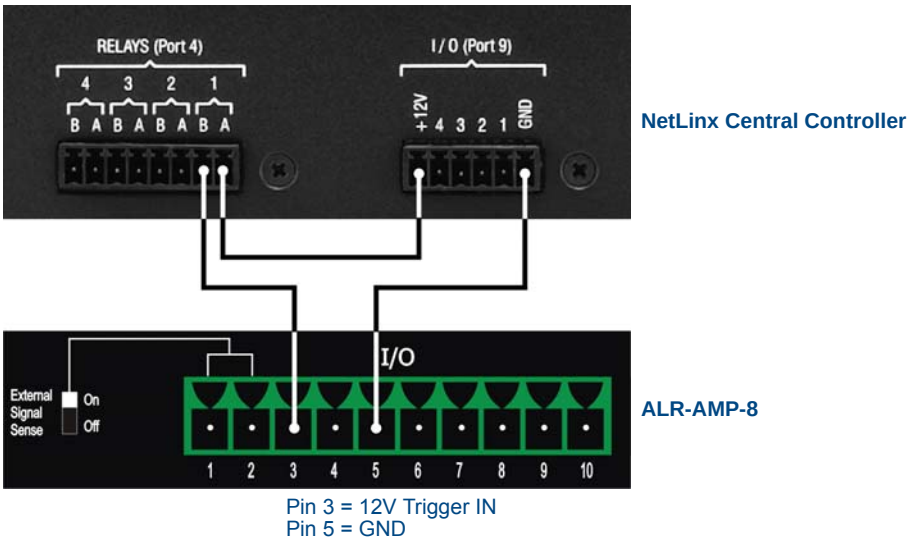

FIG. 12 PIN 3 Example - 12V Trigger (In) Connections

Typically, Pin 3 connects to a relay pin on a Controller's Relay port. For example, the connection shown in FIG. 12 would allow the Alero to be turned on/off programmatically via Relay #7 on the Controller.

Pin 4 - Trigger (Loop Out)

The Alero also provides a convenient way to daisy-chain a 12V trigger to other devices. Any voltage provided to Pin 3 is looped out to Pin 4 of the 10-pin I/O port (FIG. 13):

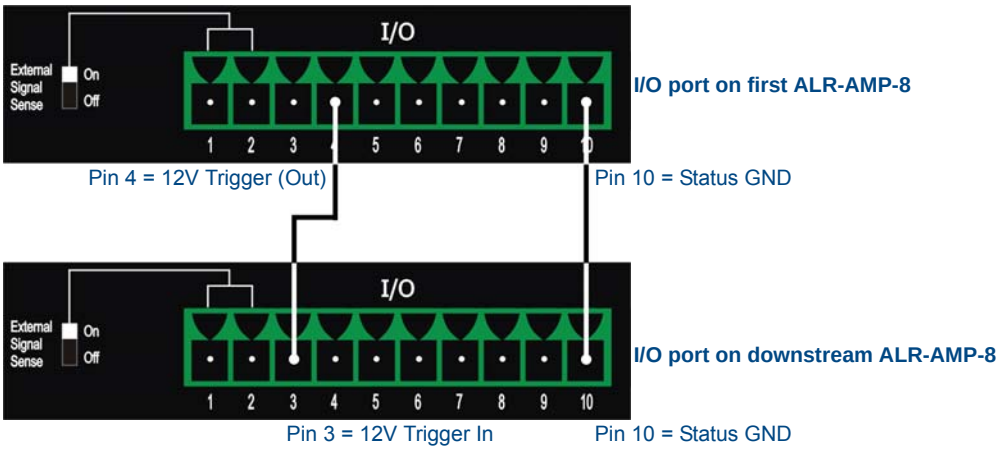

FIG. 13 PIN 4 Example - Trigger (Loop Out) Connections

Pin 4 connects to a +12V Trigger (input) on a downstream amplifier (see FIG. 12).

NOTE

Pin 3 and Pin 4 are hardwired together. Therefore, when a trigger is applied to pin 3 it will also be present at pin 4. Pin 4 will be high only if a signal is applied to Pin 3.

Pin 5 - Local/Trigger GND

Pin 5 on the 10-pin I/O port provides a ground connection for the 3-5V Logic Level Trigger. Pin 5 connects to the GND pin of an I/O port on an external controller, such as a NetLinx Central Controller.

Pin 6 - 3-5V Logic Level Trigger

The Alero can be also turned On or placed in Standby mode externally via a 3-5V Logic Level trigger signal. A 3-5V trigger input is accessible via **Pin 6** on the 10-pin I/O port.

3-5V Trigger Switch

The *3-5V Trigger Switch* (FIG. 14) has two selections; *High* and *Off*.

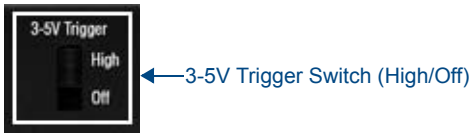

FIG. 14 3-5V Trigger Switch

When the 3-5V Trigger Switch is set to *High*, the amplifier will turn on when AC mains is turned on, For example, the 3-5V Trigger switch could be set to *High* if the amplifier needs to be forced on without having signal sense or external trigger signals.

Pins 7 & 8 - Thermal Overload and OC (Overcurrent) Monitor Indicators

The *Thermal Overload Indicator (OUT)* signal can be used to send a Thermal message from the Alero to an external controller (such as NetLinx Central Controller), if desired.

The *OC* (*Overcurrent) Monitor Indicator* (OUT) signal can be used to send an OC message from the Alero to an external controller if desired.

NOTE

The THERMAL and OC/CLIP LEDs on the front panel (see FIG. 1 on page 1) always light to indicate these conditions.

- A Thermal Overload Indicator signal is output on **Pin 7** on the 10-pin I/O port. This pin connects to an I/O pin on an external controller such as a NetLinx Central Controller (see FIG. 15).
- An Overcurrent Monitor Indicator signal is output on **Pin 8** on the 10-pin I/O port. This pin connects to an I/O pin on an external controller such as a NetLinx Central Controller (see FIG. 15).

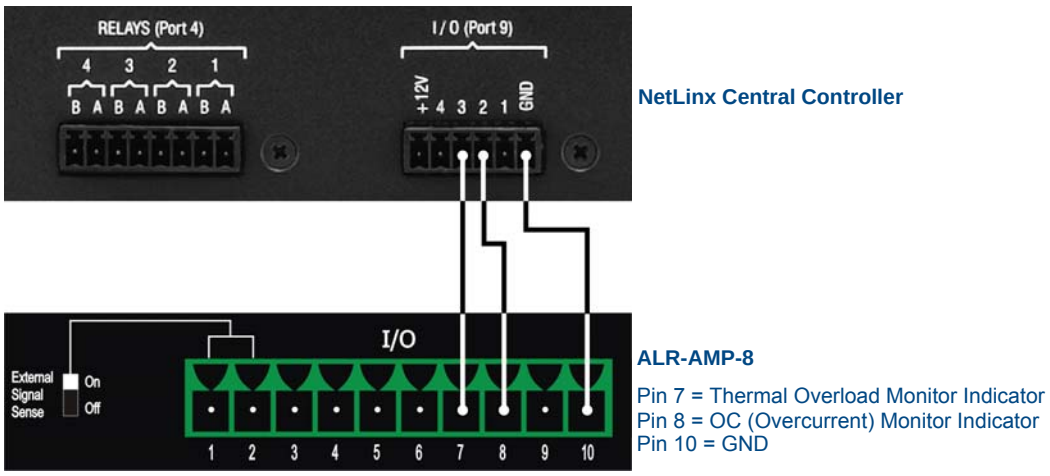

FIG. 15 Example - Thermal and OC Indicator Connections

NOTE

See page 16 for a NetLinx code example that illustrates configuring the port (on an NI-3100 NetLinx Central Controller) to properly monitor inputs from the On Signal, OC and Thermal functions.

Pin 9 - On Signal Output / 12V Trigger

On Signal Output

Pin 9 on the 10-pin I/O port provides a continuous 12VDC when the Alero exits Standby Mode for On. When the Alero is in Standby mode, Pin 9 falls to zero. When connected to an external Controller, this pin allows the Controller to be aware of the On/Off state of the Alero.

For Signal Output, Pin 9 connects to an I/O pin on an external controller such as a NetLinx Central Controller (FIG. 16):

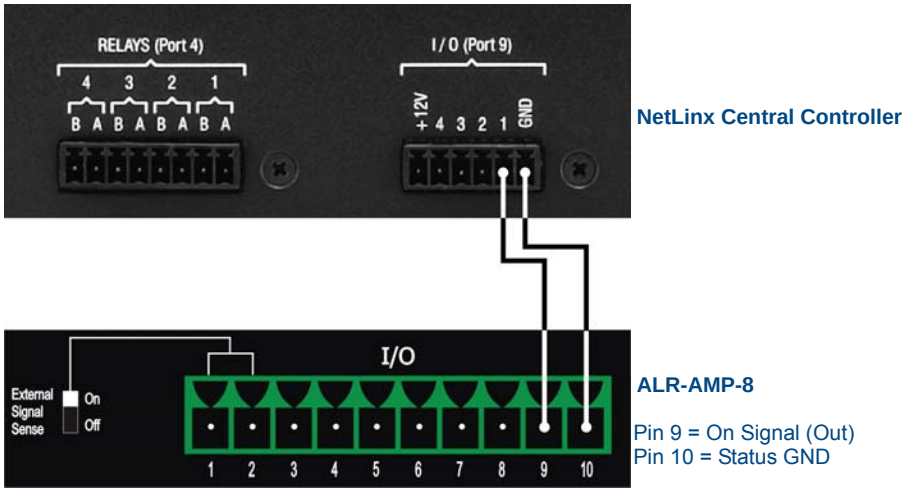

FIG. 16 Pin 9 Example Connection - On Signal Output Connections

NOTE

Refer to AMX Tech Note #777 for details regarding configuring the the I/O ports on a NetLinx Master to accept a voltage input.

12V Trigger

Pin 9 also functions as a 12V on/off output trigger. In this case, it can be used to turn on or off other amplifiers, when there are multiple Alero system in an installation.

As a 12V Trigger, Pin 9 connects to *Pin 3 (12V Trigger Input)* on a downstream Alero (FIG. 17):

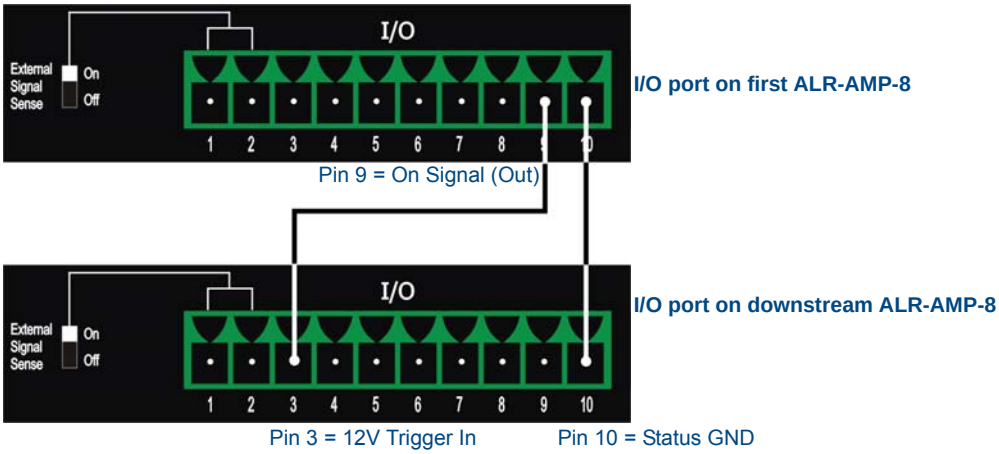

FIG. 17 Example - Thermal and OC Indicator Connections

NOTE

See page 16 for a NetLinx code example that illustrates configuring the port (on an NI-3100 NetLinx Central Controller) to properly monitor inputs from the On Signal, OC and Thermal functions.

Pin 10 - Status GND

Pin 10 on the 10-pin I/O port provides a ground reference for the Output pins (7-9), and is required for any device that needs to sense the potential.

Pin 10 connects to the GND pin of an I/O port on an external controller, such as a NetLinx Central Controller (see FIG. 16).

On/Off Control (12V Trigger, 3-5V Trigger and Signal Sense)

The Alero ALR-AMP-8 can be powered on and off externally by using the two signals 12V trigger and 3-5V trigger. A Signal Sense function is also provided which automatically can switch on the Alero in the event of an audio signal and switch off the Alero to enter standby mode when no audio signal has been present on the signal terminals for approximately 13 minutes.

The Signal Sense function consists of an audio detection circuit and a timer. If an audio signal of more than typically 1.3 mVrms is present on the Signal Sense terminals, the Alero will always be in the On mode. If none of the two triggers are high and audio is not present at the terminals the timer will switch off the Alero after 13 minutes.

NOTE

Pins 1 and 2 on the 10-pin I/O port provide Signal Sense (+ and -) inputs. See the Pin 1 - Signal Sense section on page 10 for details.

NOTE

When changing control signals from on mode to standby mode, there is a 200ms delay before the main SMPS turns off. This is to provide time for internal circuitry to power down in order to meet the standby mode current draw requirements.

Enabling and Disabling Zones

The 8-position dip switch labeled "*ZONES*" provides the ability to individually enable or disable any of the 8 Zones. It is recommended to disable Zones that are not being used, to lower power consumption.

To disable a Zone, flip the associated switch (1-8) from *Enable* (default setting) to *Disable* (FIG. 18):

FIG. 18 ZONES Dip Switch

The UP position enables each Zone; the Down position enables each Zone.

Applying Power to the Alero Amplifier

This unit should only have one source of incoming power. Using more than one source of power to the Alero can result in damage to the internal components and a possible burn out.

Apply power to the unit only after installation is complete.

AC Power Plug Connector

The following table provides pinout information for the AC Connector:

AC Power Plug Connector - Pinout Information			
PIN	**Function**	**Description**	**Type**
1	Live	Mains AC Live	Input
2	Neutral	Mains AC Neutral	Input
3	PE	Protective Earth	Input

- **Mains Power Fuse** - T6.3A H Mains Power Fuse fuse provides over-current protection.
- **Mains Power Switch** - The power switch is the AC mains switch, which turns everything off when it is in the Off position, and powers everything on when it is in the On position.

1. Connect a standard IEC 3-pole detachable power cord to the AC Mains power connector on the rear panel.
2. Plug the attached power plug into a correctly grounded wall outlet.
3. Switch the Mains Power Switch (on the rear panel) to the On position.

Note that the POWER LED on the front panel lights **Green** to indicate that the amplifier is receiving power (and not in Standby mode).

Entering Standby Mode

To put the Alero Amplifier in Standby Mode:

- Remove signal from the signal sense input, or disable signal sense input. See the *Pin 1 - Signal Sense section on page 10* for details.
- Enable 3-5V trigger -> Disable 3-5V trigger

Note that the POWER LED on the front panel lights **Red** to indicate that the amplifier is receiving power, but is in Standby mode. Also note that when in Standby mode, the 12V output trigger is turned off.

NetLinx Programming Example: On Signal, OC and Thermal Functions

The following NetLinx code example illustrates configuring the port (on an NI-3100 NetLinx Central Controller) to properly monitor inputs from the On Signal, OC and Thermal functions:

```
DEFINE_DEVICE
dvIO = 5001:17:0 // I/O port on an NI-3100
DEFINE_EVENT
DATA_EVENT[dvIO]
{
     ONLINE:
     {
          SEND_COMMAND dvIO,'SET INPUT 1 HIGH' //SENSE ACTIVE HIGH (See Tech Note 777 for
           wiring instructions)
          SEND_COMMAND dvIO,'SET INPUT 2 LOW'  //SENSE ACTIVE LOW (DEFAULT)
          SEND_COMMAND dvIO,'SET INPUT 3 LOW'  //AKA "OPEN COLLECTOR"
     }
}
/// USAGE EXAMPLE:
BUTTON_EVENT[dvIO,1]
{
     PUSH:
     {
          SEND_STRING 0,'ALR-AMP8 IS ON'
     }
     RELEASE:
     {
          SEND_STRING 0,'ALR-AMP8 IS OFF'
     }
}

BUTTON_EVENT[dvIO,2]
{
     PUSH:
     {
          SEND_STRING 0,'!!!ALR-AMP8 OVERCURRENT!!!'
     }
     RELEASE:
     {
     SEND_STRING 0,'ALR-AMP8 OC STATE NORMAL'
     }
}

BUTTON_EVENT[dvIO,3]
{
     PUSH:
     {
          SEND_STRING 0,'!!!ALR-AMP8 THERMAL PROTECTION!!!'
     }
     RELEASE:
     {
          SEND_STRING 0,'ALR-AMP8 THERMAL STATE NORMAL'
     }
}

/// ALTERNATE USAGE EXAMPLE:
DEFINE_PROGRAM
[dvTP,123] = [dvIO,1] // reflect the state of the amplifier on touch panel button 123
[dvTP,124] = [dvIO,2] // turn the button on when AMP8 is in Over Current Protection
[dvTP,125] = [dvIO,3] // turn the button on when AMP8 is in Thermal shutdown
```

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